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NOTICES FROM THE LICK OBSERVATORY.

PREPARED BY MEMBERS OF THE STAFF.

THE INNER CORONA OF APRIL 16, 1893.

The frontispiece of the present *Publication* is a direct photocopy of a reduced positive made from the second of the series of eight negatives taken with the 40-foot telescope of the LICK Observatory Eclipse Expedition to Chile.

The reduced copy on glass, made by Mr. COLTON, contains nearly all the detail of the original negative, which is just twice the scale of the illustration; nearly all the finer detail is, however, lost in the illustration here given, which represents the best results so far obtainable with printer's ink. It seems that only positives on glass (and some silver-prints) can do justice to good negatives, and only such glass copies should be studied for special investigations.

In a later publication of the LICK Observatory a silver-print of the faint outer corona will be given, showing the equatorial extensions to a distance of more than 3°, and polar extensions of nearly 2° from the Sun's center. J. M. S.

LICK OBSERVATORY, March 31, 1894.

LARGE-SCALE PHOTOGRAPHIC MAPS OF THE MOON.

During the year 1890 Dr. LANGLEY, Director of the Smithsonian Institution, sent a circular to various public and private observatories regarding the making of a photographic map of the Moon. This circular is printed in the *Observatory*, 1890, Vol. XIII, pages 403-404. Dr. LANGLEY'S circular suggests a scale of $1^{\text{mm.}} = 1''$ for such a map, which would make the Moon's diameter about 1.9 metres. Highly successful experiments in enlarging the focal negatives of the LICK Observatory have been made during the past two years by Baron ALBERT v. ROTHSCHILD of Vienna, Mr. V. NIELSEN of Copenhagen, and by Prof. WEINEK and DR. SPITALER at Prague; and these experiments have shown that it is perfectly practicable to produce such a map as Dr. LANGLEY describes by directly enlarging the focal negatives taken at Mount Hamilton. It is also distinctly advantageous to make such enlargements. That is, all features on the Moon whose angular dimensions are small and whose visibility depends upon good definition (as small crater-pits, narrow rills, etc.) are better seen on the enlargements than in any other way. This is entirely true even for the latest enlargements made by Prof. WEINEK, in which the Moon's diameter is about 10 English feet; and it is not only true for certain selected parts, but it is true for all regions suitably illuminated. Specimens of this work (silver prints) have been sent to various institutions, as the Royal Astronomical Society, the Astronomical Society of France, the Smithsonian Institution, etc., and a set of such prints is now displayed at the Midwinter Fair in San Francisco. An examination of any of these specimens will show the distinct advantage spoken of. This advantage is preserved to a great degree in an autotype reproduction of one of Prof. WEINEK'S enlargements (the crater *Tycho*) which is to form a part of Vol. III of the *Publications* of the LICK Observatory, now nearly ready for the press. Those features of the Moon which depend for their visibility upon accenting the faint *contrasts* of the original negatives (as terraces, light streaks, etc.) are not quite so well seen in the autotype plates as they are in the silver prints, or, of course, in the glass. It may now be said that the problem suggested by Dr. LANGLEY'S circular is fully solved, and that the desired map can be made.

The only question remaining is what scales will be most useful to astronomers. It is my own opinion that in the first place, an atlas of the Moon to the same scale as MAEDLER'S and LOHRMANN'S maps (3 Paris feet) is imperatively required. Such an atlas will serve nearly all of the general purposes for which a map of the Moon is commonly required. Owing to the comparatively small enlargement (some 7-fold), the atlas sheets can be made to include quite large areas of the Moon without losing the fainter contrasts of the negatives. Each region of the Moon must be shown under two different illuminations—morning and evening Sun, for example.

It would be very convenient to have a second atlas on the scale of SCHMIDT'S great map (6 feet to the diameter) for purposes of comparison. I can see no advantage in changing this scale to the slightly smaller one of $1^{\text{mm.}} = 1''$. It is also highly important to have a complete atlas on the largest *practical* scale; *i. e.*, on the largest scale which presents a distinct advantage. This scale is about 10 feet. Prof. WEINEK'S prints, above referred to, show known features of the Moon with excellent definition and relief, and they disclose a very great number of new features (*i. e.*, those hitherto unmapped and unphotographed). Nothing is shown, of course, which is not in the original negative; but what is in that negative is made obvious.

It is hoped that the 3-foot and 10-foot atlases will be made in the near future; as soon as the necessary expenses can be provided for. At any rate, the scientific problem is now solved and only the financial one remains.

EDWARD S. HOLDEN.

LICK OBSERVATORY, March 5, 1894.

MISSING MAP OF ARGELANDER'S *DURCHMUSTERUNG* WANTED.

Through the kindness of Professor KÜSTNER, Director of the Observatory at Bonn, the LICK Observatory has received *three* of the missing maps of the *Durchmusterung* mentioned in *Publications* A. S. P., Vol. VI, page 47, and takes this way of returning sincere thanks for a real favor.

Map No. 2 of the *Durchmusterung* is still lacking in our collection, and we should be glad to purchase it for its weight in silver.

E. S. H.

PUBLICATIONS OF THE LICK OBSERVATORY, VOLS. II AND III.

The second volume of the quarto *Publications* of the LICK Observatory is entirely devoted to observations of double stars, etc., made at Mount Hamilton with the 12-inch and 36-inch equatorials, by Professor S. W. BURNHAM in the years 1888–1892. It is a continuation of his many previous publications of the same kind, and constitutes the most important recent contribution to the subject. The volume will be distributed to the correspondents of the Observatory during the month of April, 1894. The third volume will be sent to the printer in the early summer. It is chiefly devoted to drawings and photographs, enlarged by